

BOOK REVIEW

## Elachistine moths of Australia (Lepidoptera: Gelechioidea: Elachistidae) by Lauri Kaila, 2011

Monographs on Australian Lepidoptera, volume 11, viii + 443 pp. CSIRO Publishing, Collingwood, Australia. ISBN: 9780643103054. Price: AU\$ 150.00.

Elachistidae moths are a species-rich clade within the diverse superfamily Gelechioidea. No wonder that such organisms remain severely under-explored in many parts of the world, especially in tropical and subtropical regions. With this present volume, the Finnish Microlepidoptera expert Lauri Kaila now has produced a great leap forward in understanding the diversity and evolution of the subfamily Elachistinae. Representatives of this clade, notably the speciose genus *Elachista*, have considerable ecological importance as one of the globally most diversified lepidopterous taxa that feed on grasses and sedges, usually as leaf miners or stem borers. Some *Elachista* species are notorious pests of agriculturally important grasses like sugar cane or millet.

The present volume, for the first time ever, integrates all taxonomic, morphological, distributional and ecological information available for the Australian species of the subfamily Elachistinae. However, this book is not 'only' a monograph whose relevance would be regionally restricted to Australia. Like other volumes of the same series, this book also provides much information that will be of interest to a far wider readership. The first chapter, co-authored by Kazuhiro Sugisima, is an in-depth analysis of the phylogeny and classification of Elachistinae under a global perspective. The second chapter introduces in detail the morphological and anatomical structures of larvae, pupae and adults, as they have been used to analyze phylogeny and characterize species and clades. There follow two brief chapters on general elachistid biology and on their distribution within Australia. The main part of the book contains detailed accounts of all recognized species, followed

by excellent color plates of the adult moths, pupal exuviae and leaf mines, and black-and-white micro photographs of all genitalic structures. Two appendices collate the taxonomic changes taken by the author, and provide the data matrix on which the phylogenetic analyses are based.

This book, like its predecessors in the same series, is extremely well produced. This does not only pertain to its scientific value and content, but also to the quality of printing (especially relevant for the many illustrations) and binding. In view of this, the price (approx. € 100 or US\$ 145) is acceptable. Of course, this book will be most interesting to the Microlepidoptera researcher community. But this volume also contains much of interest for a wider audience, from biodiversity research to pest control. To illustrate the progress Kaila has made with a few figures: the number of recognized Australian species in the Elachistinae now amounts to 148. When Kaila started to revise the fauna of that continent, the known species number had been as low as 19 (as published in volume 4 of the Monographs of Australian Lepidoptera series by E. S. Nielsen and colleagues in 1996). Of these, 5 species were just erroneously included in the family Elacistidae. Hence, within 15 years the known species richness within this single moth clade in the Australian fauna increased by one order of magnitude! Not surprisingly, most of these additions are hitherto unrecognized species. These findings now raise Australian Elachistidae richness to the 140+ species level of North America, and even rather close to the far better surveyed European fauna with 200+ recorded species. Such comparisons emphasize how important high quality taxonomic monographs still are for uncovering and understanding biodiversity, even in the age of internet databases. In particular, this volume exemplifies how valuable reference collections in natural history museums are – the materials held in the ANIC (Australian National Insect Collection), together with results of field work by the book's author, form the backbone of this monograph.

This book is to be recommended to all scientists

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with interest in the systematics and biogeography of Microlepidoptera. It should definitely be available in any larger museum or university library. Moreover, one is inclined to hope that further such volumes will continue to appear in that series, in order to improve

the documentation of Lepidopteran diversity of the Australian continent.

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